WE CLAIM AS OUR INVENTION:

1. A catheter section comprising:

an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends, comprising

a.) a braid member woven of a plurality of ribbons, at least a majority of which ribbons comprise a super-elastic alloy, and having inner and outer surfaces, and which said braid member extends along at least a portion of said lumen,

b.) at least one polymeric inner lining member interior to said braid member, and

c.) at least one outer covering member exterior to said braid member.

2. The catheter section of claim 1 wherein the catheter section has a critical bend diameter of no more than 3.0 mm.

3. The catheter section of claim 1 wherein the catheter section has a critical bend diameter of no more than 2.0 mm.

4. The catheter section of claim 1 wherein the catheter section has a critical bend diameter of no more than 1.0 mm.

5. The catheter section of claim 1 wherein at least one of said at least one outer covering members comprise a polymer.

6. The catheter section of claim 5 wherein the polymers are selected from members selected from the group consisting of polyimides, polyamides, polyesters, polyethylene, polypropylene, polyvinylchloride, polyfluorocarbons, polyurethanes, polysulfones, and their mixtures, alloys, blends, copolymers, and block copolymers.

7. The catheter section of claim 6 wherein said at least one polymeric inner lining member interior to said braid member comprises a polyfluorocarbon.

8. The catheter section of claim 7 wherein said at least one polymeric inner lining member interior to said braid member comprises polytetrafluoroethylene.

9. The catheter section of claim 8 wherein said at least one polymeric inner lining member interior to said braid member further comprises an outer polyurethane lining member between said braid member and said polytetrafluoroethylene.

10. The catheter section of claim 9 wherein said at least one outer polyurethane lining member interior to said braid member is in contact with said polytetrafluoroethylene.

11. The catheter section of claim 8 wherein the section has a distal and a proximal end and said polytetrafluoroethylene extends between said distal and proximal end.

12. The catheter section of claim 8 wherein the section has a distal and a proximal end and said braid extends between said distal and proximal end.

13. The catheter section of claim 1 wherein the super-elastic alloy comprises a nickel-titanium alloy.

14. The catheter section of claim 1 wherein the super-elastic alloy comprises a nickel-titanium alloy further containing an alloying member selected from the group consisting of vanadium, chromium, manganese, iron, and cobalt.

15. The catheter section of claim 14 wherein the alloying member is selected from the group consisting of chromium and iron.

16. The catheter section of claim 1 wherein a minority of the braid member ribbons comprise stainless steel.

17. The catheter section of claim 1 wherein a minority of the braid member ribbons comprise a member selected from the group consisting of platinum, tungsten, gold, and their mixtures and alloys.

18. The catheter section of claim 1 wherein a minority of the braid member ribbons comprise a polymer.

19. The catheter section of claim 1 wherein a minority of the braid member ribbons comprise carbon fiber.

20. The catheter section of claim 1 wherein the inner liner and outer covering members are radiation sterilizable without substantial degradation of physical attributes.

21. The catheter section of claim 1 wherein the braid member has a braid pitch and that braid pitch is constant along the axis of the braid member.

22. The catheter section of claim 1 wherein the braid member has a braid pitch and that braid pitch is not constant along the axis of the braid member.

23. The catheter section of claim 1 wherein the braid member has an outer diameter and that outer diameter is not constant along the axis of the braid member.

24. The catheter section of claim 1 wherein the braid member has an outer diameter and that outer diameter tapers along the axis of the braid member.

25. The catheter section of claim 1 wherein at least a portion of the braid member ribbons are electrically conductive and the at least the polymeric inner lining member and at least one outer covering member have openings therethrough.

26. The catheter section of claim 1 where the braid member ribbons have a thickness between 0.5 mil and 3.5 mil and a width between 2.5 and 12.0 mil.

27. The catheter section of claim 5 wherein at least one of the inner liner member and the outer covering member contains a radio-opacifier.

28. The catheter section of claim 1 wherein the section has a distal and a proximal end and said distal is formable into a nonlinear form using a mandrel and heat.

29. The catheter section of claim 5 further comprising more than one braid member located coaxially with respect to each other.

30. The catheter section of claim 1 further comprising a removable, slidable guidewire placed interior to and in slidable relationship to said section.

31. A catheter section comprising:

an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends, comprising

a.) a braid member woven of a plurality of ribbons, at least a majority of which ribbons comprise a super-elastic alloy, and having inner and outer surfaces, and which said braid member extends along at least a portion of said lumen,

b.) at least one fluorocarbon polymeric inner lining member interior to said braid member, and

c.) at least one outer polyurethane covering member exterior to said braid member.

32. The catheter section of claim 31 wherein said at least one polymeric inner lining member interior to said braid member comprises polytetrafluoroethylene.

33. The catheter section of claim 32 wherein said at least one polymeric inner lining member interior to said braid member further comprises an outer polyurethane lining member between said braid member and inner lining member.

34. The catheter section of claim 33 wherein said at least one outer polyurethane lining member interior to said braid member is in contact with said inner lining member.

35. The catheter section of claim 32 wherein the section has a distal and a proximal end and said polytetrafluoroethylene extends between said distal and proximal end.

36. The catheter section of claim 31 wherein the section has a distal and a proximal end and said braid extends between said distal and proximal end.

37. The catheter section of claim 31 wherein the super-elastic alloy comprises a nickel-titanium alloy.

38. The catheter section of claim 31 wherein the super-elastic alloy comprises a nickel-titanium alloy further containing an alloying member selected from the group consisting of vanadium, chromium, manganese, iron, and cobalt.

39. The catheter section of claim 37 wherein the alloying member is selected from the group consisting of chromium and iron.

40. The catheter section of claim 31 wherein at least one of the inner liner member and the outer covering member contains a radio-opacifier.

41. The catheter section of claim 31 further comprising a removable, slidable guidewire placed interior to and in slidable relationship to said section.

42. A catheter section comprising:

an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends, comprising

a.) a braid member woven of a plurality of ribbons, at least a majority of which ribbons comprise a super-elastic alloy, and having inner and outer surfaces, and which said braid member extends along at least a portion of said lumen,

b.) at least one polypropylene inner lining member interior to said braid member, and

c.) at least one polyethylene outer covering member exterior to said braid member.

43. The catheter section of claim 42 wherein the section has a distal and a proximal end and said braid extends between said distal and proximal end.

44. The catheter section of claim 42 wherein the section has a distal and a proximal end and said polypropylene liner extends between said distal and proximal end.

45. The catheter section of claim 42 wherein the super-elastic alloy comprises a nickel-titanium alloy.

46. The catheter section of claim 42 wherein the super-elastic alloy comprises a nickel-titanium alloy further containing an alloying member

selected from the group consisting of vanadium, chromium, manganese, iron, and cobalt.

47. The catheter section of claim 42 wherein the alloying member is selected from the group consisting of chromium and iron.

48. The catheter section of claim 42 where the braid member ribbons have a thickness between 0.5 mil and 3.5 mil and a width between 2.5 and 12.0 mil.

49. The catheter section of claim 42 wherein at least one of the inner liner member and the outer covering member contains a radio-opacifier.

50. The catheter section of claim 42 further comprising a removable, slidable guidewire placed interior to and in slidable relationship to said section.

51. A catheter comprising:

an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends,

said elongate tubular member having:

a.) a relatively stiff more-proximal segment, and

b.) a relatively flexible more-distal segment,

at least one of the more-proximal and more-distal segments comprising an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends, comprising

i.) a braid member woven of a plurality of ribbons, at least a majority of which ribbons comprise a super-elastic alloy, and having inner and outer surfaces,

ii.) at least one inner polymeric lining member interior to said braid member, and

iii.) at least one outer covering member exterior to said braid member.

52. The catheter of claim 51 wherein the distal-most segment comprising said braid has a critical bend diameter of no more than 3 mm.

53. The catheter of claim 51 wherein the catheter section has a critical bend diameter of no more than 2.0 mm.

54. The catheter of claim 51 wherein the catheter section has a critical bend diameter of no more than 1.0 mm.

55. The catheter of claim 51 wherein at least one of said at least one outer covering members comprise a polymer.

56. The catheter of claim 55 wherein the polymers are selected from members selected from the group consisting of polyimides, polyamides, polyesters, polyethylene, polypropylene, polyvinylchloride, polyfluorocarbons, polyurethanes, polysulfones, and their mixtures, alloys, blends, copolymers, and block copolymers.

57. The catheter of claim 51 wherein the super-elastic alloy comprises a nickel-titanium alloy.

58. The catheter of claim 51 wherein the super-elastic alloy comprises a nickel-titanium alloy further containing an alloying member selected from the group consisting of vanadium, chromium, manganese, iron, and cobalt.

59. The catheter of claim 51 wherein said at least one polymeric inner lining member interior to said braid member comprises a polyfluorocarbon.

60. The catheter of claim 59 wherein said at least one polymeric inner lining member interior to said braid member comprises polytetrafluoroethylene.

61. The catheter of claim 60 wherein said at least one polymeric inner lining member interior to said braid member further comprises an

outer polyurethane lining member between said braid member and said inner lining member.

62. The catheter of claim 61 wherein said at least one outer polyurethane lining member interior to said braid member is in contact with said inner lining member.

63. The catheter of claim 61 wherein a minority of the braid member ribbons are stainless steel.

64. The catheter of claim 51 wherein a minority of the braid member ribbons comprise a member selected from platinum, tungsten, gold, their mixtures and alloys.

65. The catheter of claim 51 wherein the braid member has a braid pitch and that braid pitch is constant along the axis of the braid member.

66. The catheter of claim 51 wherein the braid member has a braid pitch and that braid pitch is not constant along the axis of the braid member.

67. The catheter of claim 51 further comprising a distal-most section comprising:

a.) an inner stiffener liner of a first liner material in coaxial relationship with an outer tubular cover,

b.) an outer tubular cover comprising a cover material, and

c.) at least a distal radio-opaque marker located distally of said inner stiffener liner.

68. The catheter of claim 67 wherein the inner stiffener liner comprises a helically wound ribbon stiffener.

69. The catheter of claim 68 wherein the inner stiffener liner comprises a ribbon stiffener of a super-elastic alloy.

70. The catheter of claim 69 wherein the super-elastic alloy is comprises a nickel-titanium alloy.

71. The catheter of claim 67 wherein the outer cover material comprises a polyethylene blend containing at least 7.5% EVA.

72. The catheter of claim 71 wherein the inner liner material comprises polyethylene.

73. The catheter of claim 72 wherein the outer cover material comprises a polyethylene blend containing at least 7.5% EVA.

74. The catheter of claim 72 where the liner material and cover material are radiation sterilizable without substantial degradation of their physical attributes.

75. The catheter of claim 51 further comprising a distal-most section comprising:

a.) an inner, helically wound, lubricious, polymeric coil member in coaxial relationship with an outer tubular cover,

b.) an outer tubular cover comprising a polymeric cover material, and

c.) at least a distal radio-opaque marker located distally in said section.

76. The catheter of claim 75 wherein said inner, helically wound, lubricious, polymeric coil member comprises a polyfluorocarbon polymer.

77. The catheter of claim 75 wherein said inner, helically wound, lubricious, polymeric coil member is at least partially embedded in said outer tubular cover.

78. A catheter assembly comprising:

an elongate tubular member having a proximal end and a distal end and a passageway defining an inner lumen extending between those ends, comprising

a.) a relatively more flexible and more distal segment, comprising

i.) a braid member woven of a plurality of ribbons, at least a majority of which ribbons comprise a super-elastic alloy, and having inner and outer surfaces,

ii.) at least one inner lining member interior to said braid member, and

iii.) at least one outer covering member exterior to said braid member, and

b.) a relatively more rigid and more proximal tubular segment comprising a comparatively high flexural modulus material.

79. The catheter assembly of claim 78 wherein the relatively more distal segment has a critical bend diameter of no more than 3.0 mm.

80. The catheter assembly of claim 78 wherein at least one of the inner lining member and the outer covering member are polymers.

81. The catheter assembly of claim 80 wherein the polymers are selected from members selected from the group consisting of polyimides, polyamides, polyesters, polyethylene, polypropylene, polyvinylchloride,

polyfluorocarbons, polyurethanes, polysulfones, and their mixtures, alloys, blends, copolymers, and block copolymers.

82. The catheter assembly of claim 78 wherein the super-elastic alloy comprises a nickel-titanium alloy.

83. The catheter assembly of claim 78 wherein a minority of the braid member ribbons are stainless steel.

84. The catheter assembly of claim 78 wherein a minority of the braid member ribbons comprise a member selected from the group consisting of gold, platinum silver, and copper.

85. The catheter assembly of claim 78 wherein the inner liner and outer covering members are radiation sterilizable without substantial degradation of physical attributes.

86. The catheter assembly of claim 78 wherein at least one of the inner liner member and the outer covering member is radio-opaque.

87. The catheter assembly of claim 78 where the more proximal section comprises a polymer.

88. The catheter assembly of claim 87 where the more proximal section comprises a polymer selected from polyamides, polyamide-polyimides, polyimides, polycarbonates, LCP's, polyolefins, and acetals.

89. The catheter assembly of claim 88 where the more proximal section comprises a Nylon.

90. The catheter assembly of claim 88 where the more proximal section comprises a polyimide.

91. The catheter assembly of claim 88 where the more proximal section comprises polypropylene.

92. The catheter assembly of claim 88 where the more proximal section comprises high density polyethylene.

93. The catheter assembly of claim 88 where the more proximal section comprises a metallic tubing.

94. The catheter assembly of claim 93 where the more proximal section is electrically connected to the braid.

95. The catheter assembly of claim 78 further comprising a removable, slidable guidewire placed interior to and in slidable relationship to said sections.